

Gene Section

Mini Review

ATIC (5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase)

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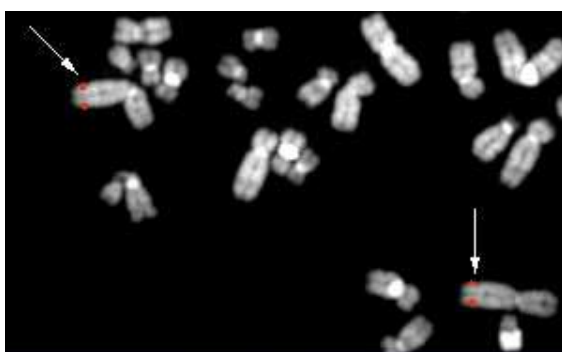
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Identity

Other names: PURH; AICARFT/IMPCHASE (5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase); AICARFT; IMPCHASE

HGNC (Hugo): ATIC

Location: 2q35



ATIC (2p35) - Courtesy Mariano Rocchi, Resources for Molecular Cytogenetics.

DNA/RNA

Transcription

1776 bp mRNA; transcribed in a centromeric to telomeric orientation.

Protein

Description

591 amino acids, 64 kDa; two functional domains separated by a linker region with a dimerization domain (amino acids 170 to 199): amino acids 1 to 169 encode the IMP cyclohydrolase (IMPCH) function, and amino acids 200 to 591 encode the 5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase (AICARFT) function; homodimer.

Expression

Wide.

Function

Bifunctional purine biosynthesis: 9th and 10th step of the de novo purine synthesis.

Homology

Belongs to the PURH family.

Implicated in

inv(2)(p23q35) --> ATIC- ALK

Disease

Found in rare cases of ALK+ anaplastic large cell lymphoma.

Cytogenetics

Hidden translocation most often.

Hybrid/Mutated gene

5' ATIC - 3' ALK.

Abnormal protein

791 amino acids, 87 kDa. 229 N-term amino acid from ATIC containing the IMPCH domain and the dimerization domain fused to the 562 C-term amino acids from ALK (i.e. the entire cytoplasmic portion of ALK with the tyrosine kinase domain); cytoplasmic localisation only.

Oncogenesis

ATIC seems to provoke the dimerization of ATIC-ALK, which should lead to constitutive autophosphorylation and activation of the ALK tyrosine kinase, as for NPM1-ALK (see t(2;5)(p23;q35)).

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